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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/697,518	10/30/2003	Bruno Hans Haider	134766	8149
<div>41838      7590      10/05/2007 GENERAL ELECTRIC COMPANY (PCPI) C/O FLETCHER YODER P. O. BOX 692289 HOUSTON, TX 77269-2289</div>				
			EXAMINER KHOLDEBARIN, IMAN K	
			ART UNIT 3737	PAPER NUMBER
			MAIL DATE 10/05/2007	DELIVERY MODE PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

Application No.

10/697,518

Applicant(s)

HAIDER ET AL.

Examiner

I Kenneth Kholdebarin

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.138(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) 3,9-12 and 15-20 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,2,4,5-8,13-14,21-27 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_.

- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_.

## DETAILED ACTION

### *Response to Arguments*

1. Applicant's arguments with respect to pending claims (1-17) have been considered but are moot in view of the new ground(s) of rejection.

### *Claim Rejections - 35 USC § 102*

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1, 19 and 21 are rejected under 35 U.S.C. 102(b) as being anticipated by Pflugrath (US 5722412).

Pflugrath teaches the method and the system where referring now to FIG. 5, the transmit/receive ASIC 20 is shown in greater detail. This ASIC is comprised of sixteen sections, each of which is coupled to six transducer elements of the array 10. The illustrated section 20a is coupled to elements 1, 17, 33, 49, 65 and 81 at the terminals on the left side of the drawing. With six elements per section, the entire ASIC can operate with a 96 element transducer. Each section could be configured to operate with eight elements, in which case the ASIC could control a 128 element transducer, for instance. Prior to the transmission of an ultrasonic pulse for a scanline, a serial stream of data from the front end ASIC 30 is clocked into transmit aperture select logic 206 at the Transmit Data In and Clk terminals at the right side of the drawing. The transmit

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aperture select logic 206 uses this data to set multiplexer switches in 3:1 transmit muxes 208 and 210 for the transducer elements that will be active for the particular scanline. For instance, the next scanline to be transmitted may have a transmit aperture comprising elements 1-32. This requires that transmit mux 208 closes a switch to connect pulser 202 to the element 1 terminal, and the transmit mux 210 closes a switch to connect pulser 204 to the element 17 terminal. In a similar manner the transmit muxes in the other fifteen sections of the ASIC will connect pulsers to element terminals 2-16 and 18-32. The back end ASIC 50 is the location of the RISC processor 500, which is used to coordinate the timing of all of the operations of the handheld ultrasound system.

### **Claim Rejections - 35 USC § 103**

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claim 4, 5, and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pflungrath in view of Little (US 5893363)

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Although Pflungrath does not teach specifically the ultrasound system with low voltage multiplexer, Little teaches the ultrasound system, wherein said multiplexers have inputs coupled to said low voltage inputs and outputs coupled to said transducer drivers.

Claims 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pflungrath in view of Little (US 5,893,363).

Re Claim 6: However, Pflungrath fails to disclose or fairly suggest pulsers to be bipolar, unipolar or combination of both and a conversion to set the timing signal to operate with low voltage pulsers. Little teaches the drive signals for unipolar pulsers (202) to each terminal of pulser as well as the complementary waveforms applied when bipolar signals are used (See Fig.5, Col. 5, lines 2-10).

Therefore, in view of Little, it would have been obvious to one of ordinary skill in the art at the time the invention was made to replace the pulsers of Pflungrath with the bipolar and unipolar pulsers in order to make both B-mode and Doppler imaging of the ultrasound machine possible.

Re Claim 7: However, Pflungrath fails to disclose or fairly suggest a digital to analog converter in handle, to transmit timing signals. Little teaches the digital analog converter (338) used in handle to convert the transmit signals to analog format for the use of pulser (See Fig. 6, Col. 7, lines 45-50).

Therefore, in view of Little, it would have been obvious to one of ordinary skill in the art at the time the invention was made to replace the direct connection of Pflungrath with the DAC

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device in order to produce the signal digital format but transmit them in analog format for more precise processing.

3. Claim 22 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pflungrath in view of Chiang.

Re Claim 22: Although Chiang fails to disclose or fairly suggest signals from the external system to comprising timing signals, Chiang mentions the pulsers (22-1-n) to synchronize the signal to be send to transducer (18-1-n).

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to have timing signals as an input for the pulsers (22-1-n), in order to keep the steady frequency on" transmitting signal towards each transducer in an imaging system.

Re Claim 23: Although, Pflungrath fails to teach the method of plurality of trasducer utilizing signals from the plurality of pulsers Chiang but Chiang shows in Fig. 5 that every individual transducer (18-1-n) is in contact with the dedicated pulsers (22-1-n) through a high voltage driver, therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to have plurality of transducers utilizing signals from the plurality of pulsers to operate, in order to control the frequency of transmitted signal to the object and making the use of each transducer by being responsive to only one pulser at the time.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to I Kenneth Kholdebarin whose telephone number is 571-270-1347. The examiner can normally be reached on M-F 8 AM- 4 PM.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian Casler can be reached on 571-272-4956. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

IKK

/Iman Kenneth Kholdebarin/

09/29/2007

  
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SUPERVISORY PATENT EXAMINER  
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